Utility Perspective from Commonwealth Edison

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Exelon

Who is Exelon?

Year 2000 Merger of:

Exelon

What is Exelon?

- Generating
  - Exelon Nuclear: 10 plants, 17 units
  - Exelon Power: 86 fossil plants
  - Exelon Power Team: Energy Trading
- Energy Delivery
  - ComEd
    - 3.4 Million Customers, Northern Illinois
  - PECO
    - 1.5 Million Customers, Southeastern Pennsylvania

Distributed Generation at ComEd

- Types of DG Installed:
  - Photo-voltaic
  - Hydro
  - Micro-Turbines
  - Internal Combustion Engines
  - Combustion Turbines

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Distributed Generation at ComEd

ComEd Focus:

Employee Safety, Equipment Protection & System Reliability.

- Published guidelines “Blue Books”
- Multi-tiered requirements for DG Interconnection
- Adherence to specific Protection Philosophies

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Distributed Generation at ComEd

DG Protection Philosophies

- "Sync Check" to protect ComEd and Customer personnel
- Prevent Islanding
- Protect Equipment from Damage
- Exclusion of DG installation on network grids or feeders into network
- Consistent with IEEE P1547

  (Standard for Interconnecting Distributed Resources with Electric Power Systems)

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Distributed Generation at ComEd

The "Blue Books"

- Recognition that one solution does not fit all DG interconnections (costs versus shared risks)
- 6 levels of protection and monitoring
- Levels are based upon aggregate generation size and voltage level

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Distributed Generation at ComEd

- Communication and SCADA Requirements
  - Relay Pilot Schemes range from “none” to multi-channel, redundant microwave, fiber, telephone, and carrier based systems
  - SCADA requirements range from none to a fully integrated customer/utility environment.
  - ComEd applies secure and proven Communication and SCADA standards to DG projects.

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Distribution Automation at ComEd

- Fully Automated 34 kV System
- Implementation of 12 kV Automation
- Commitment to a radio based communication infrastructure
  - Licensed 900 MHz
  - Unlicensed 900 MHz network grid
- Complete SCADA communication and control

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Distribution Automation at ComEd

- 34 kV System
  - 260 Lines
  - 812 pole top switches
  - Multi-point sectionalizing and line reconfiguration
  - 2000 radios and repeaters
  - S&C/Energyline switch and controller

Distribution Automation at ComEd

- 12 kV System
  - 205 Feeders in program
  - Mid-circuit sectionalizing
  - Utilizes the 34kV radio network
  - Cooper NOVA technology

Conclusions...

- Blue Books demonstrate ComEd's Commitment to Distributed Generation Projects
- Customer Base has a significant investment of DG on the ComEd system
- Exelon seeks to understand the future of DG, and is willing to adapt to emerging DG technology.
- ComEd's extensive Distribution Automation and SCADA Infrastructure could represent the model necessary to support a DG communication and control network.